

Matter, Force and Energy

Science · Class 4 · Topic-wise Practice Worksheet

TIME 40 minutes	QUESTIONS 15	TOTAL MARKS 21	MAX. SCORE ___ / 21
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **15 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–12 carry **1 mark** each. Questions 13–15 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Study every diagram and table carefully.

Section A — Scientific Reasoning

Q1–Q8 · 1 mark each

- Which state of matter has a definite shape as well as a definite volume?
 (A) Solid (B) Liquid
 (C) Gas (D) None of these
- The change of a liquid into vapour on heating is called _____.
 (A) Condensation (B) Freezing
 (C) Melting (D) Evaporation
- A push or a pull acting on an object is called a _____.
 (A) Machine (B) Force
 (C) Speed (D) Weight
- The force that opposes motion between two surfaces in contact is called _____.
 (A) Gravity (B) Magnetism
 (C) Friction (D) Tension
- A ripe fruit falls to the ground because of the force of _____.
 (A) Friction (B) Magnetism
 (C) Muscles (D) Gravity
- Which of these materials would be attracted by a magnet?
 (A) Iron nail (B) Plastic ruler
 (C) Wooden pencil (D) Rubber band
- Which of these is a good **conductor** of heat?
 (A) Wood (B) Copper
 (C) Plastic (D) Rubber
- A see-saw in a park is an example of a simple machine called a _____.
 (A) Wheel and axle (B) Pulley
 (C) Lever (D) Screw

9. The boxes below show how particles are arranged in three samples of matter. Which box represents a **gas**?

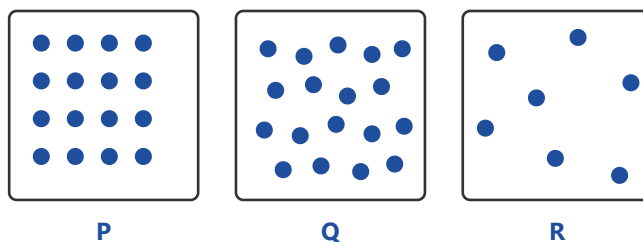


Fig. 9.1 — Arrangement of particles in three samples

- (A) P
(B) Q
(C) R
(D) Both P and Q
10. A ball rolled across a carpet stops sooner than one rolled across a smooth marble floor. Why?
(A) The carpet is softer, so the ball sinks
(B) Gravity is stronger on carpet
(C) The marble floor is colder
(D) The rough carpet produces more friction
11. A heavy drum is rolled up a sloping plank instead of being lifted straight into a truck. The plank is useful because it _____.
(A) Lets the same job be done with a smaller effort force
(B) Reduces the total work that must be done
(C) Removes the weight of the drum
(D) Removes friction completely
12. How can pure salt be obtained from sea water?
(A) By filtering the sea water
(B) By letting the water evaporate in the sun
(C) By adding more water
(D) By using a magnet

Achievers Section

Q13–Q15 · 3 marks each

13. Consider the following statements.
(i) Friction is always harmful and should be removed completely.
(ii) Gases can be squeezed into a smaller volume because their particles are far apart.
(iii) Energy can be changed from one form into another but never created.
Which of the statements is/are correct?
(A) (i) and (ii) only
(B) (ii) and (iii) only
(C) (i) and (iii) only
(D) All three
14. Two children sit on a see-saw. A 40 kg boy sits 1 m from the pivot. Where must his 20 kg sister sit for the see-saw to balance?
(A) 0.5 m from the pivot
(B) 1 m from the pivot
(C) 2 m from the pivot
(D) 4 m from the pivot
15. Water stored high in a dam falls and turns a turbine, which drives a generator and lights a bulb. Which sequence of energy changes takes place?
(A) Potential → kinetic → electrical → light
(B) Kinetic → potential → light → electrical
(C) Electrical → potential → kinetic → light
(D) Light → kinetic → potential → electrical

Answer Key

1	A	2	D	3	B	4	C	5	D
6	A	7	B	8	C	9	C	10	D
11	A	12	B	13	B	14	C	15	A

Solutions

1. Answer: (A) Solid

In a **solid** the particles are packed tightly in fixed positions, so it keeps its own shape and volume. A liquid keeps its volume but takes the shape of its container.

2. Answer: (D) Evaporation

Evaporation is the change from liquid to gas. The reverse change, gas to liquid, is condensation.

3. Answer: (B) Force

A **force** is any push or pull. It can start or stop motion, change direction, or change the shape of an object.

4. Answer: (C) Friction

Friction acts between two touching surfaces and always opposes the direction of motion. It is what finally brings a rolling ball to rest.

5. Answer: (D) Gravity

Gravity is the force with which the earth pulls every object towards its centre. It acts without anything touching the fruit.

6. Answer: (A) Iron nail

Magnets attract iron, nickel and cobalt, so an **iron nail** is attracted. Plastic, wood and rubber are non-magnetic.

7. Answer: (B) Copper

Metals such as **copper** let heat pass through them easily, so they are good conductors. Wood, plastic and rubber are insulators, which is why pan handles are made of them.

8. Answer: (C) Lever

A **lever** is a rigid bar that turns about a fixed point called the fulcrum. In a see-saw the plank is the bar and the central support is the fulcrum.

9. Answer: (C) R

In box **R** the particles are few and far apart, scattered all over the container — that is how the particles of a gas are arranged. P shows the neat tightly packed pattern of a solid and Q the closely spaced but irregular pattern of a liquid.

10. Answer: (D) The rough carpet produces more friction

Friction is greater between rough surfaces, so **the rough carpet produces more friction** and takes away the ball's energy of motion faster, stopping it in a shorter distance.

11. Answer: (A) Lets the same job be done with a smaller effort force

A sloping plank is an inclined plane. The drum travels a longer distance, but at every moment a much smaller push is needed, so it **lets the same job be done with a smaller effort force**. A simple machine never reduces the total work.

12. Answer: (B) By letting the water evaporate in the sun

Salt is dissolved, so it cannot be filtered out. When sea water is spread in shallow pans, the sun's heat evaporates the water and leaves the solid salt behind — exactly how salt is made in salt pans.

13. Answer: (B) (ii) and (iii) only

Statement (i) is false — friction wastes energy, but without it we could not walk, write or use brakes. Statements (ii) and (iii) are both true; a gas is mostly empty space, which is why cooking gas can be stored compressed. Hence **(ii) and (iii)**.

14. Answer: (C) 2 m from the pivot

A see-saw balances when weight $\times$ distance is the same on both sides.

Boy: $40 \times 1 = 40$.

Sister: $20 \times d = 40$, so $d = 2$ m. Being lighter, she must sit further out.

15. Answer: (A) Potential → kinetic → electrical → light

Water held high has **potential** energy because of its position. As it falls this becomes **kinetic** energy of moving water, which spins the generator to make **electrical** energy, and the bulb finally turns that into **light** (and some heat). The energy is never created — only converted.